



{Insert CTP - Community Name, County, State}
Cooperating Technical Partner
Mapping Activity Statement

Agreement {Insert Agreement #} - Hydrologic and Hydraulic Analyses and Floodplain Mapping

In accordance with the Cooperating Technical Partner (CTP) Memorandum of Agreement dated {insert date}, between {Insert CTP - Community Name, County, State} and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement {Insert Agreement #} is as follows:

- 1. Objective and Scope:** The objective of this Mapping Activity is to develop detailed hydrologic and hydraulic analyses and floodplain and floodway mapping in {Insert CTP or study area name}. Hydrologic analyses will be completed for approximately {Insert # of square miles} square miles of drainage area, and hydraulic analyses and floodplain mapping will be completed for approximately {Insert # of stream miles} linear miles of flooding, including the following flooding sources: {Insert names of flooding source(s) or reference attached list.}.

{Delete if automated H&H is not applied} GIS-based hydrologic and hydraulic modeling and mapping techniques will be applied to develop GIS data sets in support of the automation or semi-automation of modeling and floodplain mapping.

- 2. Period of Performance:** *{Include only the statements applicable to the funding option used for this MAS.}*

{Locally funded agreements} This Mapping Activity will begin on {Insert begin date} and will be completed no later than {Insert end date}. This Mapping Activity may be terminated at the option of FEMA or {Insert CTP} in accordance with the provisions of the {Insert DATE of CTP Memorandum Agreement}, CTP Memorandum of Agreement.

{FEMA-funded agreements} The period of performance will be in accordance with Agreement Article II.

- 3. Funding/Cost-Sharing:** *{Summarize any funding provided by FEMA and/or cost-sharing arrangements with the community. This section can be marked "Not Applicable" for locally funded Mapping Activities.}*

- 4. Standards:** The following standards and documents are relevant to this Mapping Activity:

- Detailed hydrologic and hydraulic analyses and floodplain mapping will follow the standards set forth in FEMA 37, *Guidelines and Specifications for Study Contractors* (January 1995), and Title 44 of the Code of Federal Regulations (CFR), Part 65. FEMA 37 is available at FEMA's Website at http://www.fema.gov/mit/tsd/EN_reg.htm. Title 44 of the CFR is available at FEMA's Website at www.access.gpo.gov/cgi-bin/cfrassemble.cgi?title=199944.

{Insert date agreement is written}

- Computer models used for hydrologic and/or hydraulic analyses will meet the requirements of 44 CFR 65.6(a)(6) and be on FEMA's *Numerical Models Accepted by FEMA for NFIP Usage* (http://www.fema.gov/mit/tsd/EN_modl.htm).
- Topographic mapping used to delineate floodplains and floodways will be of adequate scale and topographic definition to provide reasonable accuracy. Planimetric features will be compatible with the base map (with respect to horizontal accuracy) selected by FEMA for Digital FIRM production. Topographic mapping taken from aerial photogrammetry or surveys will comply with the requirements of Appendix 4 of FEMA 37. The selection of the topographic mapping source to be used will be coordinated with the FEMA Regional Project Manager prior to analysis and mapping.
- Any levee or dike systems to be shown on the community's FIRM as providing protection from the 1% annual chance flood will comply with the requirements of 44 CFR 65.10. Chapter 7 of FEMA 37 provides guidelines for evaluating levee and dike systems.
- Flood elevations and floodplain and floodway boundaries will reasonably tie in to non-revised information in accordance with 44 CFR 65.6(a)(2).
- The floodway will be established in accordance with 44 CFR 65.7, as well as any applicable state and/or community requirements.
- Digital mapping will comply with the requirements of Chapter 9 and Appendix 7 of FEMA 37.
- *{Delete this item if automated GIS-based modeling and mapping are not utilized}* Automated data processing and modeling algorithms for GIS-based modeling and mapping will be documented and provided to FEMA to ensure that they are consistent with the standards outlined above. Digital data sets (such as elevation, basin, or land use data) will be documented and provided to FEMA for approval prior to performing the analysis to ensure that they meet minimum requirements. If non-commercial (i.e., custom developed) software is used for the analysis, then full user documentation, technical algorithm documentation, and the software will be provided to FEMA for review prior to performing the scope of work.
- Digital Elevation Models (DEMs) and field survey data will meet vertical accuracy requirements contained in Appendix 4 of FEMA 37.

5. Products: *{Insert CTP}* will make available items outlined in Chapter 11 of FEMA 37 in the Technical Support Data Notebook (TSDN) format. These include:

- Digital 1% and 0.2% annual chance floodplain and floodway boundaries;
- Digital profiles of the 10%, 2%, 1%, and 0.2% annual chance water-surface elevations, representing existing conditions;
- Flood Insurance Study (FIS) report;
- Floodway data tables;
- Digital copies of all hydrologic and hydraulic modeling (input and output files); and
- All back-up data used in the analyses or mapping.

{Delete if not utilizing automated H&H applications} For GIS-based modeling and mapping, *{Insert CTP}* will deliver all digital input and output data, intermediate data processing products, GIS data layers, and final products in the format of the Digital Flood Insurance Rate Map (DFIRM) database structure.

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6. Schedule and Milestones:

Milestone 1 (Scoping Phase): Products for the first milestone to be provided to the FEMA Regional Project Manager include:

- Annotated copies of effective FIRMs depicting limits of proposed study.
- Documentation of the proposed source of topographic data, scale, contour interval, source/methodology, date of survey/data collection, vertical and horizontal datums, and comparison of planimetric features with the DFIRM base map selected by FEMA for DFIRM production.
- A written summary of the initial data research, proposed analysis methodologies, and a work plan.
- *{Delete if automated H&H is not utilized}* Documentation of digital data sets to be used (such as elevation, basin, and land use data). Full user documentation, technical description of methodologies and algorithms, and a copy of the source codes and custom-developed software applications for GIS-based modeling will also be provided.
- Copies of topographic maps depicting proposed cross section locations.

Milestone 2 (Hydrology Phase): Products for the second milestone to be provided to the FEMA Regional Project Manager include draft hydrologic analyses in accordance with the TSDN format.

Milestone 3 (Hydraulics Phase): Products for the third milestone to be provided to the FEMA Regional Project Manager include the hydraulic models and sample floodplain mapping in accordance with TSDN format.

Milestone 4 (Final Products): Final products to be provided to the FEMA Regional Project Manager include:

- The completed TSDN and accompanying data containing the information outlined in Section 5 of this Mapping Activity Statement.
- A QA/QC report documenting the results of the independent review of all computational and data processing procedures.

Final products will be made available in accordance with the Period of Performance described in Section 2 of this Mapping Activity Statement.

7. Certification: The following certifications apply to this Mapping Activity (as appropriate):

- Hydrologic and/or hydraulic analyses and data will be certified by a registered Professional Engineer or Licensed Land Surveyor in accordance with 44 CFR 65.6(f).
- Topographic information will be certified by a registered Professional Engineer or Licensed Land Surveyor in accordance with 44 CFR 65.5(c).
- If fill is to be considered in the mapping to raise land areas to or above the 1% annual chance flood elevation, certification of the fill will be provided in accordance with 44 CFR 65.5(a)(6) by the community's NFIP permit official, a registered Professional Engineer, or a Licensed Land Surveyor.
- Any levee systems to be accredited as discussed in Section 4 of this Mapping Activity Statement will be certified in accordance with 44 CFR 65.10(e).

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8. Technical Assistance and Resources: {Insert CTP} may obtain copies of FEMA-issued Letters of Map Change (LOMCs), archived engineering back-up data, and data collected as part of the Mapping Needs Assessment Process from FEMA's Map Coordination Contractor (MCC). The MCC may be contacted at 1-877 FEMA MAP (1-877-336-2627). General technical and programmatic information, such as FEMA 265, the Quick-2 computer program, and the MT-2 forms, can be downloaded from FEMA's Flood Hazard Mapping Website (www.fema.gov/mit/tsd/). Specific technical and programmatic support may be provided through FEMA's MCC; such assistance should be requested through the FEMA MCC Project Manager specified in Section 12 of this Mapping Activity Statement.

{Delete this paragraph if GIS-based automated techniques are not utilized.} {Insert CTP} may also consult with the FEMA Regional Project Manager to request support in the areas of selection of data sources, digital data accuracy standards, assessment of vertical data accuracy, data collection methods or sub-contractors, and GIS-based engineering and modeling training.

9. Contractors: {Specify any contractors to be utilized by the CTP to complete the activity. Mark "not applicable" if none.} Procurement of subcontractors using Federal funds provided as part of this Mapping Activity will comply with the requirements of 44 CFR 13.36.

10. Quality Assurance/Quality Control (QA/QC) Procedures: {Insert name of CTP partner} will undertake internal QA/QC reviews to ensure that the products described under Section 5 of this Mapping Activity Statement conform with the standards outlined under Section 4 of this Mapping Activity Statement. Additionally, an independent review for compliance with these standards will be undertaken by {Insert name of entity to perform QA/QC review}.

{For automated H&H} For GIS-based, automated modeling, QA/QC activities should ensure automated calculations are reasonable and in compliance with standard flood modeling and mapping approaches. {Insert CTP} will document internal QA/QC procedures to ensure all calculations and data processing were reviewed.

11. Reporting: {Locally funded agreements} {Specify reporting requirements, if any.}
{FEMA-funded agreements} Reporting requirements will be in accordance with Agreement Articles V & VI.

12. Points of Contact: The FEMA Regional Project Manager is {Insert FEMA Regional Project Manager Name}, and the CTP Project Manager is {Insert CTP Project Manager Name} or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. If it is necessary, the assistance of FEMA's MCC should be requested through the FEMA MCC Project Officer, {Insert FEMA MCC PO Name}.

Each party has caused this Mapping Activity Statement to be executed by its duly authorized representative.

{Insert CTP Manager Name, Title}
{Insert CTP - Community Name, State}

Date

{Insert FEMA Regional Project Manager Name},
{Eastern/Central/Western} Project Manager
Federal Emergency Management Agency

Date

State representative*

Date

*In States where statutory and/or regulatory requirements require the State's review and/or approval of new flood hazard data, the State will be a signatory to a CTP Mapping Activity Statement.